

## CLAIMS

1. A fluidized-bed gasification furnace for gasifying combustibles, comprising:

5 a fluidized bed having a substantially rectangular horizontal cross section, a circulating flow of a fluidized medium being formed in said fluidized bed, and combustibles supplied to said fluidized bed being gasified in said circulating flow of the fluidized medium to produce gas and  
10 char; and

at least one incombustibles discharging portion defined at at least one side of said fluidized bed for discharging the fluidized medium and incombustibles accompanying the fluidized medium, said at least one  
15 incombustibles discharging portion being disposed at the lower end of said fluidized bed.

2. A fluidized-bed gasification furnace according to claim 1, wherein said at least one incombustibles  
20 discharging portion comprises two incombustibles discharging portions at a pair of facing sides of said fluidized bed.

3. A fluidized-bed gasification furnace according to claims 1 or 2, wherein said fluidized bed is surrounded by  
25 furnace walls having a substantially rectangular inner surface in horizontal cross section.

4. A fluidized-bed gasification furnace according to  
30 any one of claims 1 to 3, wherein said incombustibles discharging portion is provided below a central portion of said fluidized bed.

5. A fluidized-bed gasification furnace according to any one of claims 1 to 4, wherein a freeboard located above said fluidized bed has a substantially circular horizontal cross section.

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6. A fluidized-bed gasification furnace according to any one of claims 1 to 5, wherein an apparatus for forming said circulating flow of the fluidized medium comprises a fluidized-bed bottom inclined toward said incombustibles 10 discharging portion, and a fluidizing gas supplying apparatus for supplying fluidizing gases having substantially different mass velocities from the inclined fluidized-bed bottom.

15 7. A fluidized-bed gasification furnace according to claim 6, wherein said apparatus for forming said circulating flow of the fluidized medium further comprises a deflector.

20 8. A fluidized-bed gasification furnace according to any one of claims 1 to 7, wherein a fluidized-bed bottom is inclined toward said incombustibles discharging portion and has an end portion connected to said incombustibles discharging portion, said end portion is inclined at 45 25 degrees or more, and a fluidizing gas is blown into from said end portion.

9. A fluidized-bed gasification furnace according to any one of claims 1 to 8, further comprising:

30 a vertical chute having a fixed length which is substantially vertically disposed and communicates with said incombustibles discharging portion; and

an incombustibles discharging apparatus for discharging the incombustibles from said fluidized-bed

gasification furnace, said incombustibles discharging apparatus being provided below said vertical chute to communicate with said vertical chute.

5 10. A fluidized-bed gasification furnace according to claim 9, wherein said incombustibles discharging apparatus discharges the incombustibles horizontally.

11. A fluidized-bed gasification furnace for gasifying 10 combustibles, comprising:

a fluidized-bed having a substantially rectangular horizontal cross section; and

a freeboard having a substantially circular horizontal cross section,

15 wherein a circulating flow of a fluidized medium is formed in said fluidized bed, and combustibles supplied to said fluidized bed are gasified to generate gas and char.

12. A fluidized-bed gasification and slagging 20 combustion system, comprising:

a fluidized-bed gasification furnace according to any one of claims 1 to 11; and

a slagging combustion furnace for combusting the gas and char produced in said fluidized-bed gasification

25 furnace and melting ash.